

# Claims

- [c1] 1.A method for triggering an action of at least one downhole device in a downhole network integrated into a downhole tool string synchronized to an event comprising:
- determining latency between a control device and the at least one downhole device;
- sending to the downhole device a latency adjusted signal for triggering the action,
- and
- performing the action downhole synchronized to the event.
- [c2] 2.The method of claim 1 wherein the event is performed by the control device, a clock, surface equipment, or another downhole device.
- [c3] 3.The method of claim 1 wherein the latency to each downhole device is determined through logical analysis of measurements obtained by measuring the time between sending a first signal to the downhole device and receiving a response signal from the downhole device.

- [c4] 4.The method of claim 3 wherein time between the downhole device receiving the first signal and sending the response signal is a known constant.
- [c5] 5.The method of claim 3 wherein the measurements are performed multiple times.
- [c6] 6.The method of claim 1 wherein the control device is a computer.
- [c7] 7.The method of claim 1 wherein the control device comprises a connection to a local area network.
- [c8] 8.The method of claim 1 wherein the control device comprises a clock source.
- [c9] 9.The method of claim 8 wherein the clock source is selected from the group consisting of at least one crystal, at least one transistor, at least one oscillator, at least one RC circuit, at least one LC circuit, and at least one RLC circuit.
- [c10] 10.The method of claim 1 wherein the downhole device comprises multiple downhole devices.
- [c11] 11.The method of claim 1 wherein the downhole devices are selected from the group consisting of sensors, motors, jars, seismic sources, seismic receivers, steering elements, hammers, and repeaters.

- [c12] 12.The method of claim 10 wherein the downhole devices communicate with the control device via multiple electrically conducting medium.
- [c13] 13.The method of claim 1 wherein each downhole device comprises a local clock source.
- [c14] 14.The method of claim 13 wherein the clock source of each downhole device is synchronized with the clock source of the control device.
- [c15] 15.The method of claim 1 wherein the control device sends a single signal to multiple downhole devices.
- [c16] 16.The method of claim 1 wherein the control device sends a separate signal to each downhole device.
- [c17] 17.The method of claim 1 wherein the actions are selected from the group consisting of data acquisition, mechanical operations and electrical operations.
- [c18] 18.The method of claim 1 wherein the downhole devices perform different actions.
- [c19] 19.The method of claim 1 wherein the action is triggered at the moment the downhole device receives the signal.
- [c20] 20.The method of claim1 wherein the action of the downhole device is triggered at a specified delay after

receiving the signal.

- [c21] 21.The method of claim 1 wherein the action is performed at a specified time of day.
- [c22] 22.A method for triggering an action of multiple downhole devices on a downhole network integrated into a downhole tool string synchronized to an event comprising:  
measuring time between a computer sending a first signal to the downhole device and receiving a response signal from the downhole device,  
performing a logical computation on the measurements to determine the latency, sending to the downhole device a latency adjusted signal for triggering the action, and  
performing the action downhole synchronized to the event.
- [c23] 23.The method of claim 22 wherein the event is selected from the group consisting of an action of the computer, a moment in time, the variation of a clock, an action of another downhole device, an action of another device.
- [c24] 24.The method of claim 22 wherein time between the downhole device receiving the first signal and sending the response signal is a known constant.
- [c25] 25.The method of claim 22 wherein the measurements

are performed multiple times.

- [c26] 26.The method of claim 22 wherein the computer is connected to a local area network.
- [c27] 27.The method of claim 22 wherein the clock of the computer is synchronized to a GPS clock.
- [c28] 28.The method of claim 22 wherein the downhole devices are selected from the group consisting of sensors, motors, jars, seismic sources, seismic receivers, steering elements, hammers, and repeaters.
- [c29] 29.The method of claim 22 wherein each downhole device comprises a local clock source.
- [c30] 30.The method of claim 29 wherein the clock source of each downhole device is synchronized with the clock source of the control device.
- [c31] 31.The method of claim 22 wherein the computer sends a single signal to multiple downhole devices.
- [c32] 32.The method of claim 22 wherein the computer sends a separate signal to each downhole device.
- [c33] 33.The method of claim 22 wherein the actions are selected from the group consisting of data acquisition, mechanical operations and electrical operations.

- [c34] 34.The method of claim 22 wherein the downhole devices perform different actions.
- [c35] 35.The method of claim 22 wherein the action of the downhole device is triggered at a specified delay after receiving the signal.
- [c36] 36.The method of claim 22 wherein the action is performed at a specified time of day.